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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/059,926	01/29/2002	Michel Daage	JSS-0208	9575

7590 11/19/2003

ExxonMobil Research and Engineering Company
P.O. Box 900
Annandale, NJ 08801-0900

EXAMINER

STRICKLAND, JONAS N

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 11/19/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/059,926	Applicant(s) DAAGE ET AL.	
	Examiner Jonas N. Strickland	Art Unit 1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
 a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>4,5</u> . | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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4. Claims 1-4, 9-12, 14-22, 24 and 27-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitchell (US Patent 5,292,705) in view of Clark et al. (US Patent 5,071,538).

Applicant claims a process for the enhancement of a used metal catalyst for the catalytic hydrogenation of carbon monoxide, said catalyst comprising one or more members selected from the group consisting of Co, Ni, Cu, Ru, Rh, Pd, Os, Ir, Re and Pt, the process comprising: a) decreasing the hydrocarbon content thereof; calcining under an oxidant-containing atmosphere; impregnating with a solution of a compound of at least one metal selected from the group consisting of Co, Ni, Cu, Ru, Rh, Pd, Os, Ir, Re, Pt, Mo, W, Si, Cr, Ti, Mg, Mn, Zr, Hf, Al, Th, La, Ce and Y; calcining under an oxidant-containing atmosphere; and reducing with a hydrogen-containing gas at elevated temperatures thereby forming an active catalyst.

Mitchell discloses a process for the activation of hydrocarbon synthesis catalysts by contact with hydrogen at elevated temperature and pressures and in the presence of liquid hydrocarbons (see abstract). The catalyst metal is preferably a Group VIII metal, such as cobalt or ruthenium and may also have a promoter, such as ruthenium and rhenium (col. 3, line 52 – col. 4, line 24). Mitchell continues to disclose wherein the catalyst is prepared by impregnation of a cobalt nitrate and then the promoter and furthermore, followed by drying and calcinations and then reduction with hydrogen. Mitchell also discloses wherein the treatment with hydrogen, whether first or second or subsequent hydrogen treating step, is usually performed ex-situ, but can be performed in the reactor just prior to start up, particularly for fixed bed units (col. 1, lines 23-29).

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Mitchell also discloses wherein a slurry bed may also be utilized (col. 1, lines 65-66).

Mitchell also discloses having additional oxidation cycles (col. 4, lines 16-17), therefore it would have been obvious to one of ordinary skill in the art to enhance a used catalyst having two oxidation treatments as taught by Mitchell.

Furthermore, Clark et al. teaches a process for regenerating a spent catalyst, wherein the catalyst is initially subjected to an oxidation step, wherein the catalyst is contacted with an oxygen-containing gas at about 400°F to about 700°F. Clark et al. continues to teach wherein subsequently to the initial decoking step at least one rare earth metal is incorporated with the partially decoked spent catalyst (col. 9, lines 50-65). Clark et al. continues to teach wherein the promoters may include lanthanum and cerium (col. 9, lines 66-68). The metals are impregnated as a salt of nitrate, as well as acetate (col. 10, lines 65-67). It should also be noted that Mitchell also discloses wherein the promoter may also include cerium (col. 3, line 60).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the teachings of Mitchell, by calcining the spent catalyst before promoter impregnation, since Clark et al. teaches wherein subsequently to the initial decoking step at least one rare earth metal (cerium) is incorporated with the partially decoked spent catalyst. Such modification would have been obvious to one of ordinary skill in the art, because one of ordinary skill in the art, would have expected a regeneration process of a catalyst, which carries out an oxidation step prior to impregnating the catalyst with cerium as taught by Clark et al., to have been similarly useful and applicable to the process for regenerating

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a catalyst, wherein multiple oxidation steps may be carried out and impregnation of cerium improves the catalyst as taught by Mitchell.

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mitchell (US Patent 5,292,705) in view of Clark et al. (US Patent 5,071,538) as applied to claims 1-4, 9-12, 14-22, 24 and 27-33 above, and further in view of Mitchell (US Patent 5,283,216).

Applicant claims with respect to claim 5, wherein the impregnation solution in step c) contains a salt of the same metal as the catalyst metal. The teachings of Mitchell '705 and Clark et al. have been discussed with respect to claims 1-4, 9-12, 14-22, 24 and 27-33, but the references do not disclose wherein the impregnated metal is the same as the catalyst metal.

However, Mitchell '216 teaches wherein a ruthenium catalytic metal may also have a ruthenium promoter for the rejuvenation of a hydrocarbon synthesis catalyst (col. 3, lines 67 – col. 4, line 11).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the teachings of Mitchell '705 and Clark et al. by impregnating a salt of the same metal as the catalyst metal, since Mitchell '216 teaches wherein a ruthenium catalytic metal may also have a ruthenium promoter for the rejuvenation of a hydrocarbon synthesis catalyst. Such modification would have been obvious to one of ordinary skill in the art, because one of ordinary skill in the art, would have expected a process for rejuvenating hydrocarbon synthesis catalysts, which are comprised of cobalt and ruthenium and have promoters as taught by Mitchell '216 to be similarly useful and applicable to the

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process for rejuvenating hydrocarbon synthesis catalysts, which are comprised of cobalt and ruthenium and have promoters as taught by Mitchell '705 and Clark et al.

6. Claims 8 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitchell (US Patent 5,292,705) in view of Clark et al. (US Patent 5,071,538) as applied to claims 1-4, 9-12, 14-22, 24 and 27-33 above, and further in view of Clerici et al. (US Patent 6,121,333).

Applicant claims with respect to claim 6, wherein a passivation step. Mitchell and Clark et al. fail to disclose a passivation step after reduction.

However, Clerici et al. teaches a process for the preparation of hydrocarbons from synthesis gas, wherein the catalyst is produced by wet impregnation technique, calcinations, reduction, and passivation.

Therefore, it would have been obvious to one of ordinary skill to modify the teachings of Mitchell and Clark et al., by carrying out a passivation step in a process for regenerating a hydrocarbon synthesis catalyst, since Clerici et al. teaches a process for the preparation of hydrocarbons from synthesis gas, wherein the catalyst is produced by a wet impregnation technique, calcinations, reduction, and passivation. Such modification would have been obvious to one of ordinary skill in the art, since Mitchell, Clark et al., and Clerici et al. are all directed towards methods for producing hydrocarbon synthesis catalysts.

7. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mitchell (US Patent 5,292,705) in view of Clark et al. (US Patent 5,071,538) as applied to claims

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1-4, 9-12, 14-22, 24 and 27-33 above, and further in view of Nay et al (US Patent 5,728,918).

Applicant claims with respect to claim 13, wherein the catalyst is a Dispersed Active Metal (DAM) catalyst (unsupported catalyst). Mitchell and Clark et al. both teach wherein the hydrocarbon synthesis catalyst is a supported catalyst.

However, Nay et al. teaches wherein the cobalt hydrocarbon synthesis catalyst may be supported, as well as unsupported (col. 3, lines 58-67).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the teachings of Mitchell and Clark et al., based on the teachings of Nay et al., by having a cobalt hydrocarbon synthesis catalyst, which is either supported or unsupported, because Nay et al. teaches wherein the cobalt hydrocarbon synthesis catalyst may be supported, as well as unsupported. Such modification would have been obvious to one of ordinary skill in the art, since all the references are directed towards having cobalt catalysts utilized in the process of hydrocarbon synthesis.

8. Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitchell (US Patent 5,292,705) in view of Clark et al. (US Patent 5,071,538) as applied to claims 1-4, 9-12, 14-22, 24 and 27-33 above, and further in view of Benham (WO 98/27181).

Applicant claims with respect to claims 25 and 26, wherein the catalyst particles are separated from the mixture by centrifugal separation. The teachings of Mitchell and Clark et al. have been discussed with respect to claims 1-4, 9-12, 14-22, 24 and 27-33, but they are silent in regards to claims 25 and 26.

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However, Benham teaches a catalyst/wax separation device for slurry Fischer-Tropsch reactors, wherein the catalyst particles are removed by centrifugal separation (see abstract and p. 1).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the teachings of Mitchell and Clark et al, by removing catalyst particles by centrifugal separation, because Benham teaches a device for removing catalyst particles by centrifugal separation for slurry Fischer-Tropsch reactors. Such modification would have been obvious to one of ordinary skill in the art, because one of ordinary skill in the art, would have expected a process for treating catalysts in a hydrocarbon synthesis slurry reactor as taught by Mitchell and Clark et al. to be similarly useful and applicable to a process for producing hydrocarbons in a slurry Fischer-Tropsch reactor as taught by Benham.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonas N. Strickland whose telephone number is 703-306-5692. The examiner can normally be reached on M-TH, 7:30-5:00, off 1st Friday.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 703-308-3837. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9310.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-0661.



Jonas N. Strickland
November 11, 2003



STANLEY S. SILVERMAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700